OIPE
70570
JUL 17 2003
PATENT & TRADEMARK OFFICE

FIG. 1
(PRIOR ART)

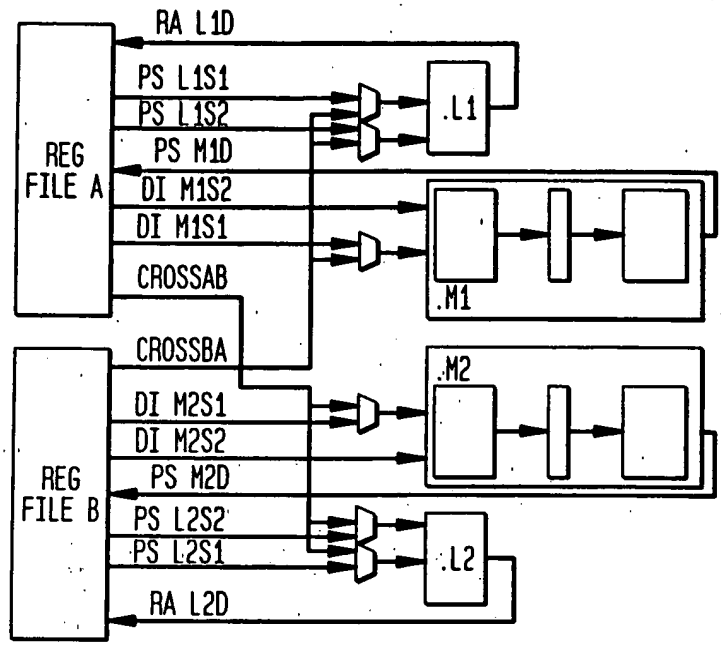


FIG. 2
(PRIOR ART)

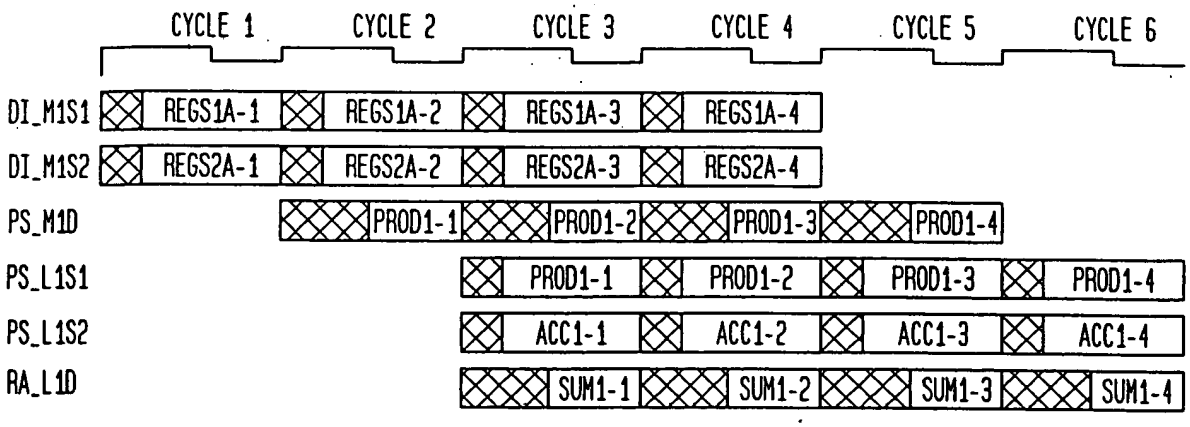


FIG. 3

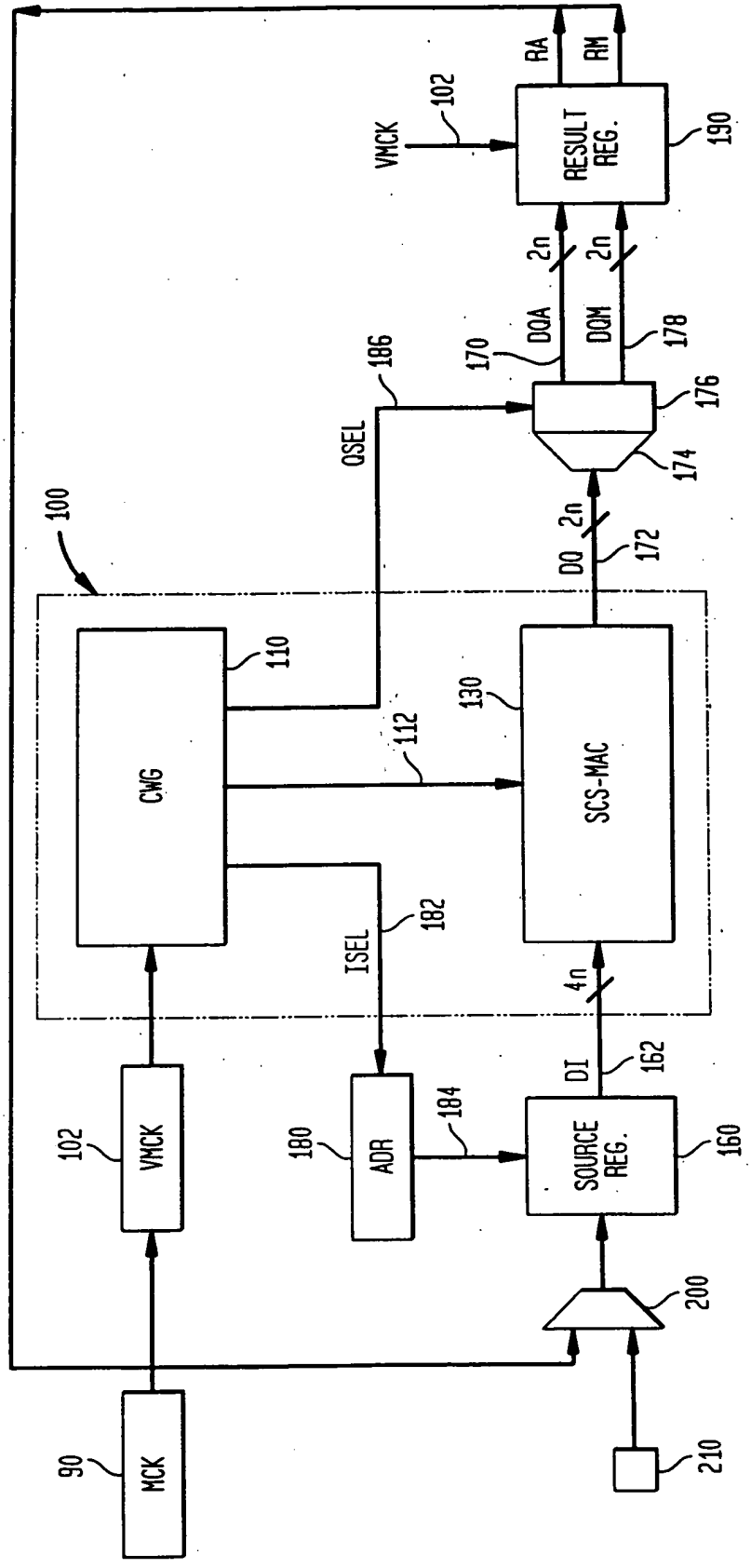

RA
RM
VMCK
102
RESULT REG.
190
2n
2n
DQA
DQM
178
170
186
176
QSEL
174
100
2n
DQ
172
110
130
CWG
112
SCS-MAC
ISEL
182
4n
DI
162
102
VMCK
180
ADR
184
SOURCE REG.
160
200
90
MCK
210

FIG. 4

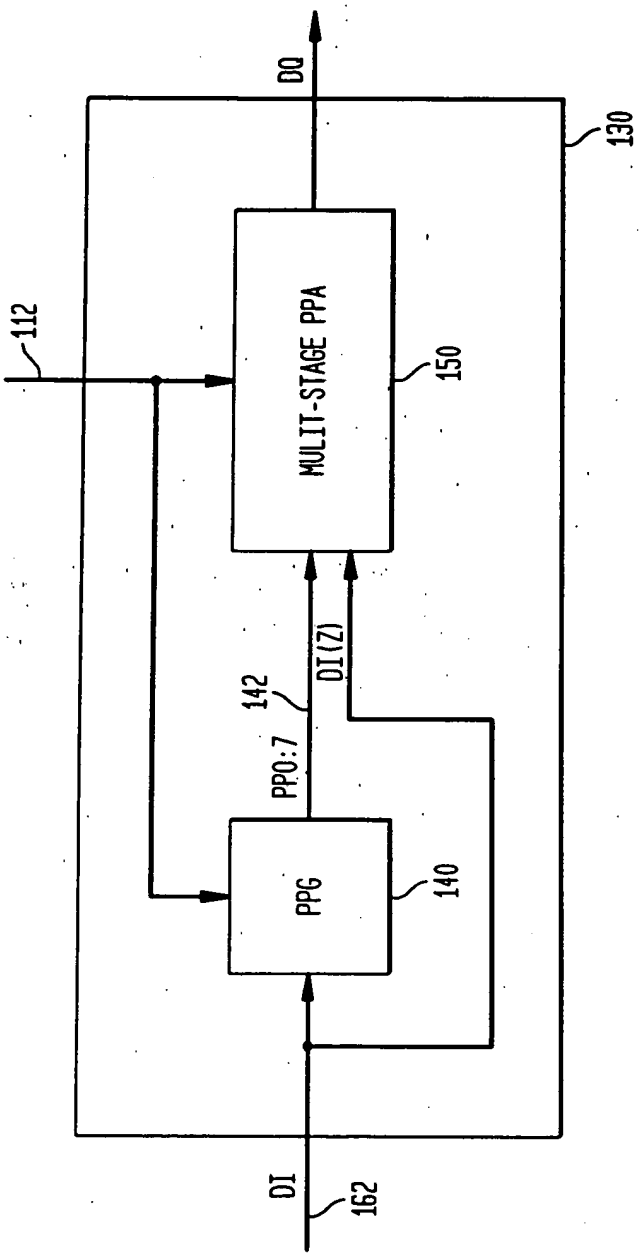


FIG. 5

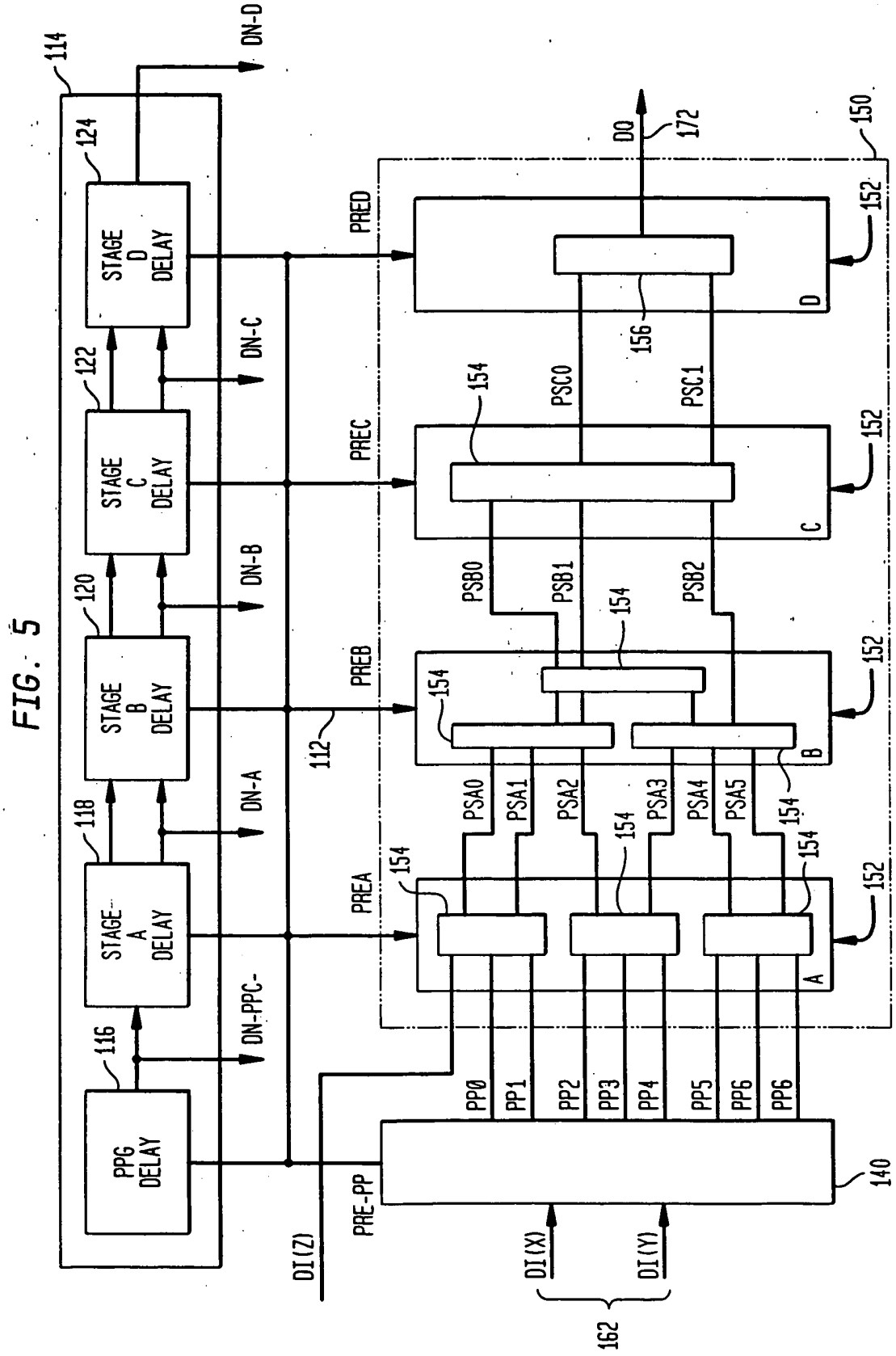

114
DN-D
124
STAGE D DELAY
122
STAGE C DELAY
DN-C
120
STAGE B DELAY
DN-B
118
STAGE A DELAY
DN-A
116
PPG DELAY
DN-PPC-
DI(Z)
PRE-PP
PRED
PREC
PREB
PREA
112
DQ
172
150
152
156
154
PSC0
PSC1
PSB0
PSB1
PSB2
PSA0
PSA1
PSA2
PSA3
PSA4
PSA5
D
C
B
A
PP0
PP1
PP2
PP3
PP4
PP5
PP6
PP6
140
DI(X)
DI(Y)
162

FIG. 6

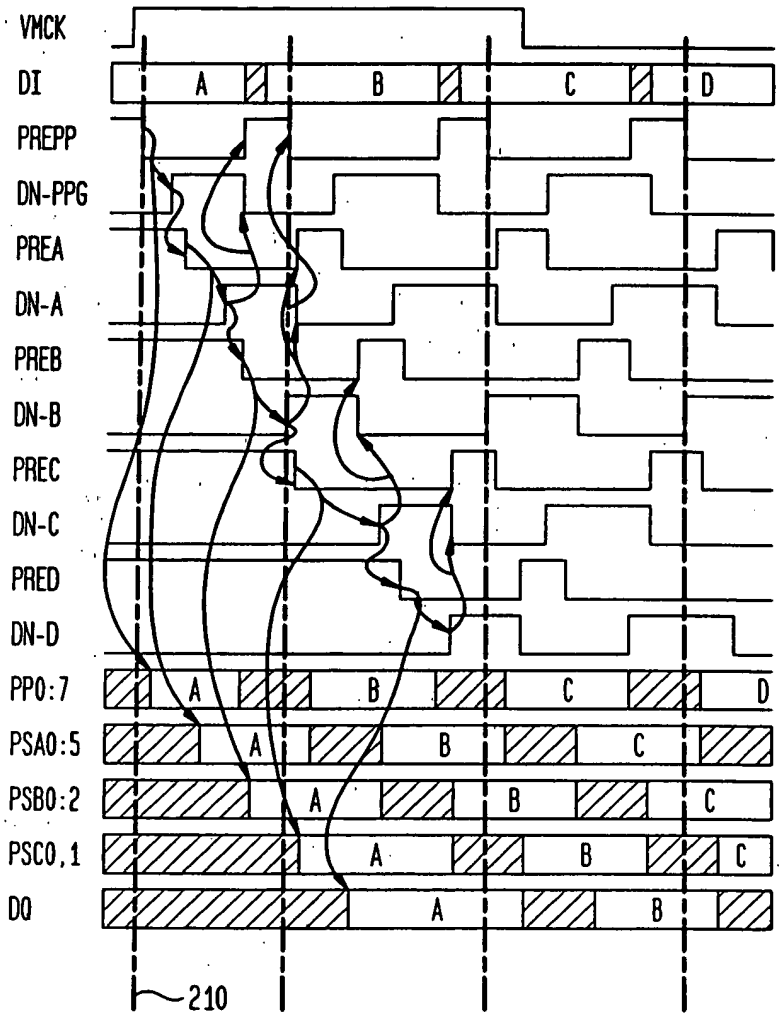

VMCK
DI
PREPP
DN-PPG
PREA
DN-A
PREB
DN-B
PREC
DN-C
PRED
DN-D
PP0:7
PSA0:5
PSB0:2
PSC0,1
DQ
A
B
C
D
210

FIG. 7

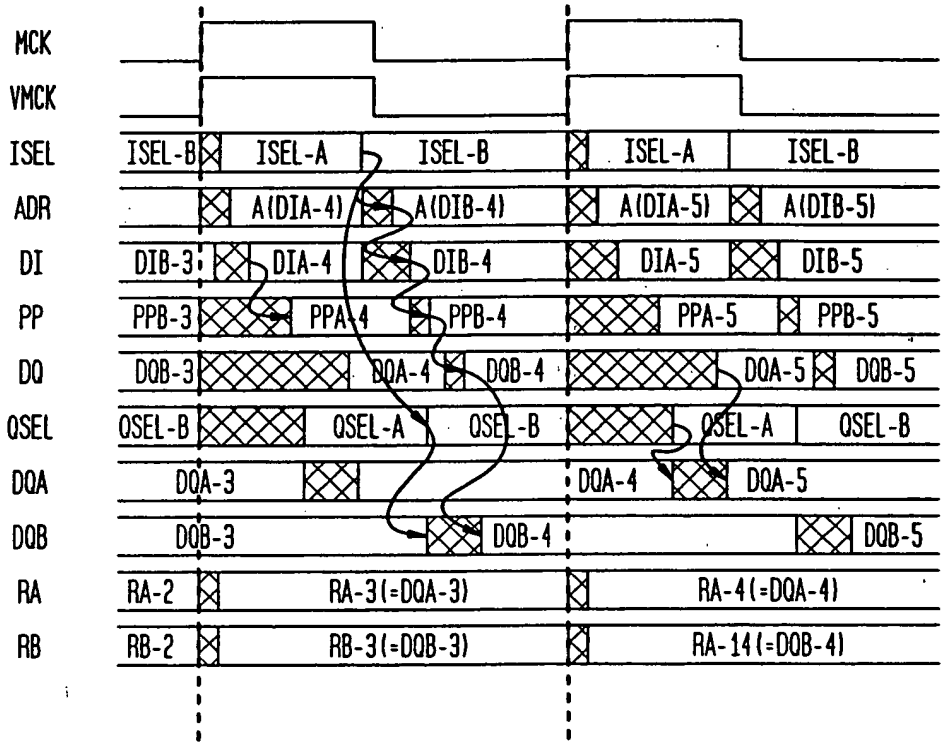

MCK
VMCK
ISEL
ADR
DI
PP
DQ
QSEL
DQA
DQB
RA
RB
ISEL-B
ISEL-A
ISEL-B
ISEL-A
ISEL-B
A(DIA-4)
A(DIB-4)
A(DIA-5)
A(DIB-5)
DIB-3
DIA-4
DIB-4
DIA-5
DIB-5
PPB-3
PPA-4
PPB-4
PPA-5
PPB-5
DQB-3
DQA-4
DQB-4
DQA-5
DQB-5
QSEL-B
QSEL-A
QSEL-B
QSEL-A
QSEL-B
DQA-3
DQA-4
DQA-5
DQB-3
DQB-4
DQB-5
RA-2
RA-3(=DQA-3)
RA-4(=DQA-4)
RB-2
RB-3(=DQB-3)
RA-14(=DQB-4)

FIG. 8

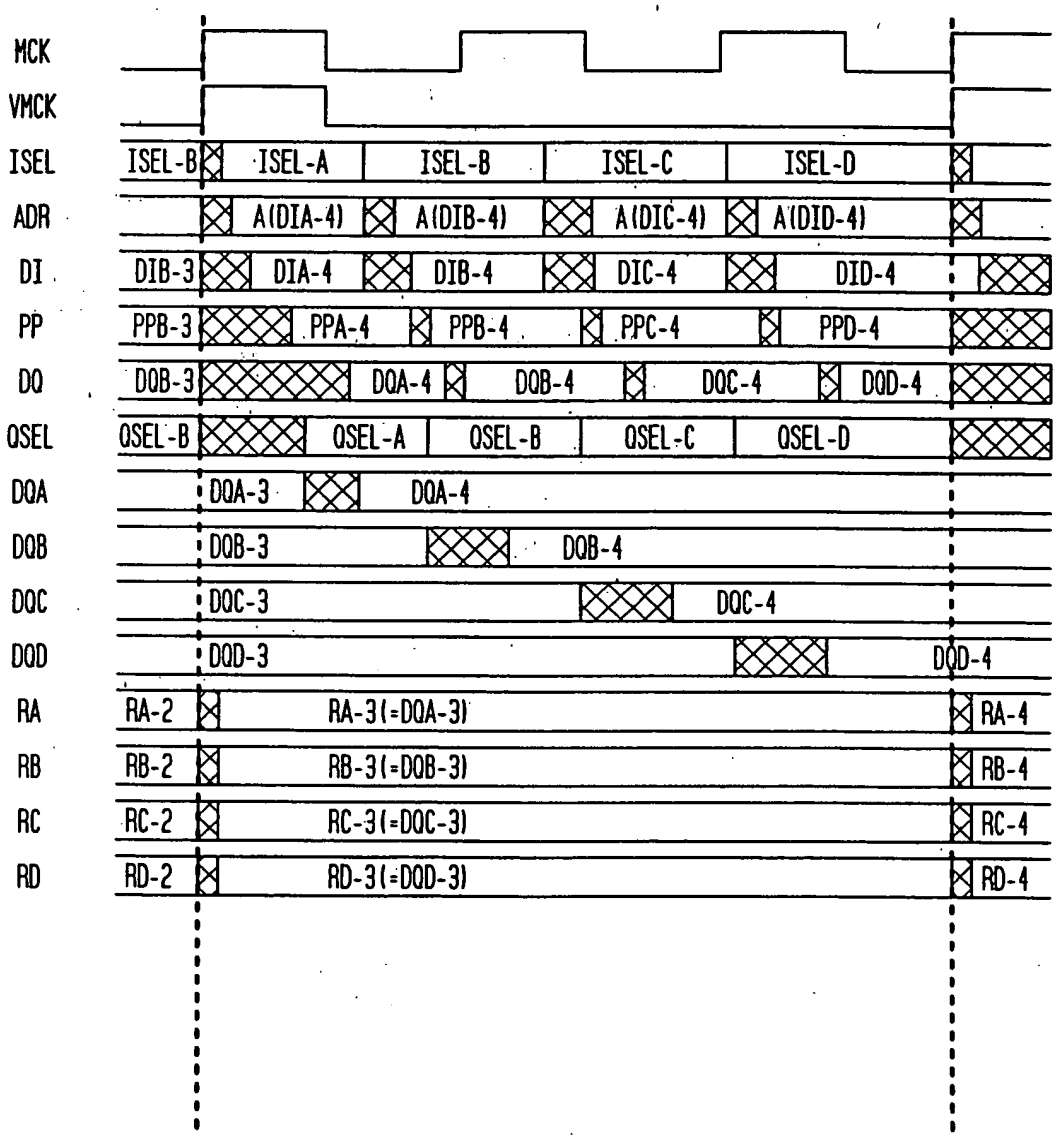

MCK
VMCK
ISEL
ADR
DI
PP
DQ
QSEL
DQA
DQB
DQC
DQD
RA
RB
RC
RD
ISEL-B
ISEL-A
ISEL-B
ISEL-C
ISEL-D
A(DIA-4)
A(DIB-4)
A(DIC-4)
A(DID-4)
DIB-3
DIA-4
DIB-4
DIC-4
DID-4
PPB-3
PPA-4
PPB-4
PPC-4
PPD-4
DQB-3
DQA-4
DQB-4
DQC-4
DQD-4
QSEL-B
QSEL-A
QSEL-B
QSEL-C
QSEL-D
DQA-3
DQA-4
DQB-3
DQB-4
DQC-3
DQC-4
DQD-3
DQD-4
RA-2
RA-3(=DQA-3)
RA-4
RB-2
RB-3(=DQB-3)
RB-4
RC-2
RC-3(=DQC-3)
RC-4
RD-2
RD-3(=DQD-3)
RD-4

FIG. 9

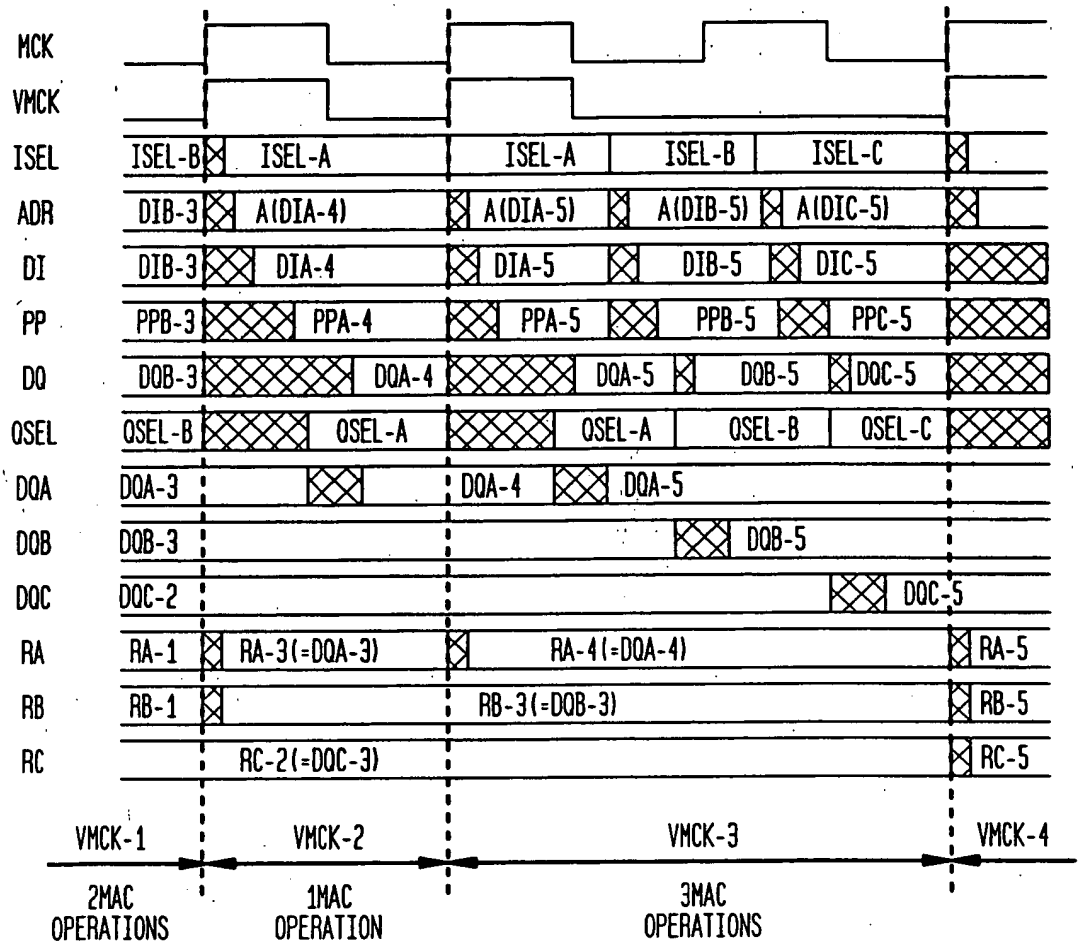
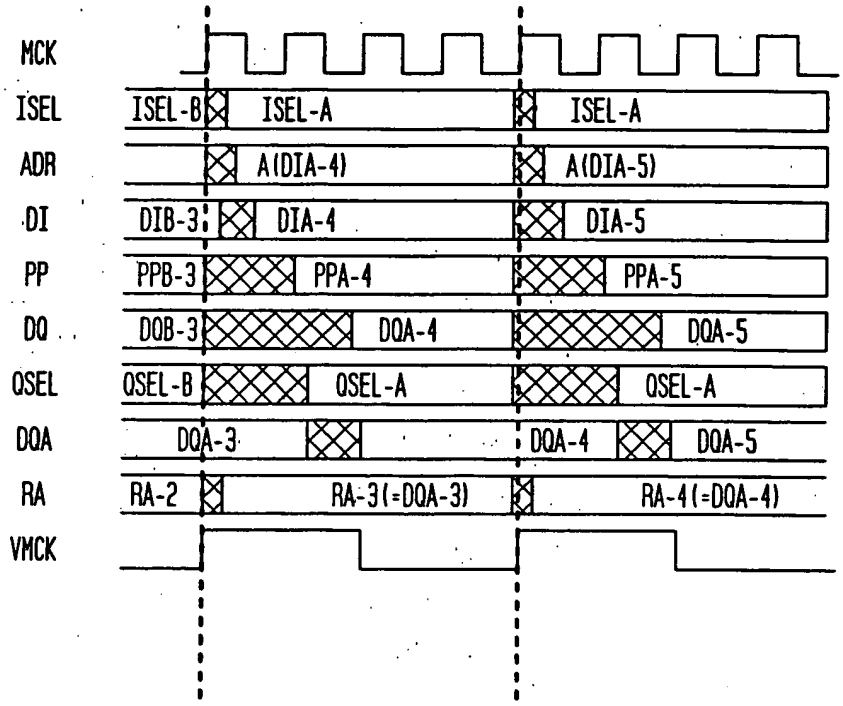

MCK
VMCK
ISEL
ADR
DI
PP
DQ
QSEL
DQA
DQB
DQC
RA
RB
RC
ISEL-B
ISEL-A
ISEL-A
ISEL-B
ISEL-C
DIB-3
A(DIA-4)
A(DIA-5)
A(DIB-5)
A(DIC-5)
DIB-3
DIA-4
DIA-5
DIB-5
DIC-5
PPB-3
PPA-4
PPA-5
PPB-5
PPC-5
DQB-3
DQA-4
DQA-5
DQB-5
DQC-5
QSEL-B
QSEL-A
QSEL-A
QSEL-B
QSEL-C
DQA-3
DQA-4
DQA-5
DQB-3
DQB-5
DQC-2
DQC-5
RA-1
RA-3(=DQA-3)
RA-4(=DQA-4)
RA-5
RB-1
RB-3(=DQB-3)
RB-5
RC-2(=DQC-3)
RC-5
VMCK-1
VMCK-2
VMCK-3
VMCK-4
2MAC OPERATIONS
1MAC OPERATION
3MAC OPERATIONS

FIG. 10


MCK
ISEL
ADR
DI
PP
DQ
QSEL
DQA
RA
VMCK
ISEL-B
ISEL-A
ISEL-A
A(DIA-4)
A(DIA-5)
DIB-3
DIA-4
DIA-5
PPB-3
PPA-4
PPA-5
DQB-3
DQA-4
DQA-5
QSEL-B
QSEL-A
QSEL-A
DQA-3
DQA-4
DQA-5
RA-2
RA-3(=DQA-3)
RA-4(=DQA-4)